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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/747,933

12/29/2003

Kwang Ryong Oh

5882P071

7073

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7590

06/29/2005

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EXAMINER

CHIEM, DINH D

ART UNIT

PAPER NUMBER

2883

DATE MAILED: 06/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/747,933

Applicant(s)

OH ET AL.

Examiner

Erin D. Chiem

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 4/11/05.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).
2. Applicant's arguments with respect to claims 1-16 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Takemi et al. (US 5,539,763).
5. Regarding claims 1, 2, 5-9, 12-14 Takemi teaches an opto-electronic device with an integrated light deflector, comprising a passive optical waveguide (Fig. 1; 107) having an n-type InP lower cladding 102, a p-type InGaAsP core 107, and an p-type InP upper cladding layer 106a

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and in combination of the claddings with the core the optical signals are transmit through the substrate; and a light deflector, in the form of a diffraction grating, is integrally formed by patterning the upper cladding layer in a predetermined shape at an upper portion of the passive optical waveguide (col. 11, line 55-57) (col. 12, line 56-58); wherein a refractive index of the core under the predetermined shape is modified to deflect a light beam by applying a current or an electrical field to a particular portion of the light deflector having the predetermined shape (col. 16, line 30-34). Since the gratings are formed onto the upper cladding through photolithography (i.e., wafer cleaning; barrier layer formation; photoresist application; soft baking; mask alignment; exposure and development; and hard-baking) then the deflector is made of the same material as the laser diode (col. 16, line 30-34).

6. Regarding claims 3-4 and 10-11 the light deflector, taught by Takemi, is an array of trapezoidal shaped cleaves, and photolithography technique is used for its consistent replication of patterns.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 15-16 rejected under 35 U.S.C. 103(a) as being unpatentable over Takemi et al. and Funabashi et al. (US 6,580,740).

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9. Takemi teaches a semiconductor laser having InP claddings and InGaAsP core, wherein a deflector is formed on the upper cladding by photolithography. The deflector is in the form of an array of diffraction gratings and the deflection is controlled by an electrical source. By applying a voltage to the deflector, the refractive index is modified; hence, activating the deflector to selectively deflect a predetermined wavelength. However, Takemi does not teach an external cavity laser comprising the aforementioned semiconductor laser and a collimator lens for collimating light beam emergent from the light source,; and a diffraction grating for changing a diffraction angle depending on a wavelength of the light beam through the collimator lens.

10. Funabashi teaches a semiconductor laser having InGaAsP core and InP claddings wherein the diffraction grating is integrally formed on the active region (col. 5, line 14-27) and in further disclosure of Fig. 12b, Funabashi teach the laser system having the semiconductor laser optically coupled to a collimating lens 1270. The collimating lens direct the beam to an external diffraction grating 1280 and reflects a specific wavelength 1265 diffracted by the diffraction grating. The purpose of providing the additional assembly of the collimating lens and the external diffraction grating is to provide stability to the lasing signal.

11. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to stabilize the lasing signal by providing an external resonating cavity (i.e., the space between the integrated gratings of the semiconductor light source and the external diffraction grating. The resonating cavity provides stability to the laser radiation by reflecting the radiation back and forth within the cavity with partial waves from reflected back and forth within the optical resonator with partial waves from individual signal passes overlapping each other. When the wavelength of the radiation field is a multiple of twice the distance between the

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mirrors, the partial waves overlap constructively, otherwise they overlap destructively. This leads to a wavelength selection - the resonator thus restricts both the direction of propagation and the frequency of the laser light. The non-linear interaction of the laser beam field with the active medium reduces the bandwidth in addition to limiting the frequency. **The motivation** for coupling the semiconductor laser to the collimator and the diffraction grating is to stabilize the lasing radiation and reduces backreflection into the semiconductor laser.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

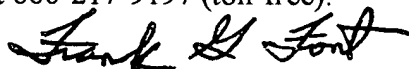
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erin D. Chiem whose telephone number is (571) 272-3102. The examiner can normally be reached on Monday - Thursday 9AM - 5PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Erin D Chiem
Examiner
Art Unit 2883



Frank G. Font
Supervisory Primary Examiner
Technology Center 2800